

WEST Search History

DATE: Friday, June 02, 2006

<u>Hide?</u>	<u>Set Name</u>	<u>Query</u>	<u>Hit Count</u>
		<i>DB=PGPB,USPT; PLUR=YES; OP=ADJ</i>	
<input type="checkbox"/>	L14	L13 and viscos\$ and liquid	4
<input type="checkbox"/>	L13	l1 and 134/\$.cccls.	34
		<i>DB=EPAB; PLUR=YES; OP=ADJ</i>	
<input type="checkbox"/>	L12	EP-1610366-A1.did.	0
		<i>DB=DWPI; PLUR=YES; OP=ADJ</i>	
<input type="checkbox"/>	L11	1610366.pn.	3
<input type="checkbox"/>	L10	1610366	4
		<i>DB=EPAB; PLUR=YES; OP=ADJ</i>	
<input type="checkbox"/>	L9	1610366	0
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		<i>DB=PGPB; PLUR=YES; OP=ADJ</i>	
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<input type="checkbox"/>	L6	US-20040055621-A1.did.	1
		<i>DB=JPAB; PLUR=YES; OP=ADJ</i>	
<input type="checkbox"/>	L5	JP-02099175-A.did.	1
		<i>DB=EPAB,JPAB,DWPI,TDBD; PLUR=YES; OP=ADJ</i>	
<input type="checkbox"/>	L4	photomask and viscos\$ and cleaning	4
		<i>DB=PGPB,USPT; PLUR=YES; OP=ADJ</i>	
<input type="checkbox"/>	L3	L1 and viscos\$	10
<input type="checkbox"/>	L2	L1 with viscosity	0
<input type="checkbox"/>	L1	photomask with liquid with cleaning	74

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L4: Entry 4 of 4

File: DWPI

Apr 11, 1990

DERWENT-ACC-NO: 1990-158946

DERWENT-WEEK: 199021

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TITLE: Waste liq. discharge device for photomask cleaning device, etc. - has liquid pool by which high viscosity treatment liq. is discharged and diluted by low viscosity treatment liquid NoAbstract Dwg 1/5

PATENT-ASSIGNEE: HITACHI DENSHI ENG KK (HISB)

PRIORITY-DATA: 1988JP-0249113 (October 4, 1988)

[Search Selected](#)[Search ALL](#)[Clear](#)

PATENT-FAMILY:

PUB-NO	PUB-DATE	LANGUAGE	PAGES	MAIN-IPC
<input type="checkbox"/> JP 02099175 A	April 11, 1990		000	

APPLICATION-DATA:

PUB-NO	APPL-DATE	APPL-NO	DESCRIPTOR
JP 02099175A	October 4, 1988	1988JP-0249113	

INT-CL (IPC): B05C 9/10; B08B 3/02; G03F 1/08; H01L 21/30

DERWENT-CLASS: J04 L03 P42 P43 P84 U11

CPI-CODES: J04-X; L04-C09;

EPI-CODES: U11-C04A1; U11-C04A2;

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Search Results - Record(s) 1 through 4 of 4 returned.

☐ 1. Document ID: US 20030127117 A1

Using default format because multiple data bases are involved.

L14: Entry 1 of 4

File: PGPB

Jul 10, 2003

PGPUB-DOCUMENT-NUMBER: 20030127117

PGPUB-FILING-TYPE: new

DOCUMENT-IDENTIFIER: US 20030127117 A1

TITLE: Processing apparatus and processing method

PUBLICATION-DATE: July 10, 2003

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY
Kohama, Kyouji	Tokyo-To		JP
Shimbo, Eiji	Tokyo-To		JP
Kamikawa, Yuji	Kumamoto-ken		JP
Toshima, Takayuki	Yamanashi-ken		JP
Ohno, Hiroki	Tokyo-To		JP

US-CL-CURRENT: [134/30](#); [134/153](#), [134/157](#), [134/200](#), [134/33](#), [134/42](#), [134/85](#), [134/902](#), [134/95.2](#)

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	FIGS	Drawings
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☐ 2. Document ID: US 6895979 B2

L14: Entry 2 of 4

File: USPT

May 24, 2005

US-PAT-NO: 6895979

DOCUMENT-IDENTIFIER: US 6895979 B2

TITLE: Processing apparatus and processing method

DATE-ISSUED: May 24, 2005

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Kohama; Kyouji	Hachioji			JP
Shimbo; Eiji	Nerima-Ku			JP
Kamikawa; Yuji	Koshi-Machi			JP

Toshima; Takayuki Futaba-Cho JP
Ohno; Hiroki Machida JP

US-CL-CURRENT: 134/117; 134/148, 134/157, 134/183, 134/200, 134/902

ABSTRACT:

A processing apparatus essentially includes a rotatable rotor 21 for carrying semiconductor wafers W, a motor 22 for driving to rotate the rotor 21, a plurality of processing chambers for surrounding the wafers W carried by the rotor 21, for example, an inner chamber 23 and an outer chamber 24, a chemical supplying unit 50, an IPA supplying unit 60, a rinse supplying unit 70 and a drying fluid supplying unit 80. With this constitution of the apparatus, it is possible to prevent the wafers from being contaminated due to the reaction of treatment liquids of different kinds, with the improvement of processing efficiency and miniaturization of the apparatus.

11 Claims, 24 Drawing figures
Exemplary Claim Number: 1
Number of Drawing Sheets: 21

Full	Title	Citation	Front	Review	Classification	Date	Reference			Claims	Publ	Draw
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3. Document ID: US 6536452 B1

L14: Entry 3 of 4

File: USPT

Mar 25, 2003

US-PAT-NO: 6536452

DOCUMENT-IDENTIFIER: US 6536452 B1

TITLE: Processing apparatus and processing method

DATE-ISSUED: March 25, 2003

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Kohama; Kyouji	Hachioji			JP
Shimbo; Eiji	Tokyo-To			JP
Kamikawa; Yuji	Koshi-Machi			JP
Toshima; Takayuki	Yamanashi-Ken			JP
Ohno; Hiroki	Machida			JP

US-CL-CURRENT: 134/117; 134/148, 134/157, 134/183, 134/200, 134/902

ABSTRACT:

A processing apparatus essentially includes a rotatable rotor 21 for carrying semiconductor wafers W, a motor 22 for driving to rotate the rotor 21, a plurality of processing chambers for surrounding the wafers W carried by the rotor 21, for example, an inner chamber 23 and an outer chamber 24, a chemical supplying unit 50, an IPA supplying unit 60, a rinse supplying unit 70 and a drying fluid supplying unit 80. With this constitution of the apparatus, it is possible to prevent the

wafers from being contaminated due to the reaction of treatment liquids of different kinds, with the improvement of processing efficiency and miniaturization of the apparatus.

30 Claims, 24 Drawing figures
Exemplary Claim Number: 14
Number of Drawing Sheets: 21

Full	Title	Citation	Front	Review	Classification	Date	Reference			Claims	FIGS	Drawing
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4. Document ID: US 6149727 A

L14: Entry 4 of 4

File: USPT

Nov 21, 2000

US-PAT-NO: 6149727
DOCUMENT-IDENTIFIER: US 6149727 A

TITLE: Substrate processing apparatus

DATE-ISSUED: November 21, 2000

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Yoshioka; Katsushi	Kyoto			JP
Ogura; Hiroyuki	Kyoto			JP
Sanari; Takuya	Kyoto			JP

US-CL-CURRENT: 118/500; 118/320, 118/52, 118/56, 118/730, 134/153, 134/902, 269/21, 427/240

ABSTRACT:

A spin holder has a disk-like supporting portion, and a circular wall portion for supporting the back side of a substrate is formed inside the periphery of the top surface of the disk-like supporting portion. A circular groove is formed near the periphery of the top surface of the disk-like supporting portion, the circular groove surrounding the outside of the circular wall portion. An O ring is fitted into the circular groove. The top surface of the circular wall portion on the spin holder supports the back side of the substrate and the O ring comes in close contact with the back side of the substrate. Even if a vacuum leakage occurs between the circular wall portion and the back side of the substrate due to suction force created by a vacuum suction source, the O ring keeps the hermetic state in the space between the circular wall portion and the O ring. This prevents mist around the spin holder from being drawn toward the suction surface between the O ring and the substrate.

17 Claims, 25 Drawing figures
Exemplary Claim Number: 1
Number of Drawing Sheets: 13

Full	Title	Citation	Front	Review	Classification	Date	Reference			Claims	FIGS	Drawing
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Term	Documents
LIQUID	1289660
LIQ	5245
LIQS	6
LIQUIDS	255245
VISCOS\$	0
VISCOS	570
VISCOSA	169
VISCOSALACTONE	2
VISCOSAMETER	2
VISCOSANT	5
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(L13 AND VISCOS\$ AND LIQUID).PGPB,USPT.	4

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☐ 1. Document ID: US 20050252526 A1

L13: Entry 1 of 34

File: PGPB

Nov 17, 2005

PGPUB-DOCUMENT-NUMBER: 20050252526

PGPUB-FILING-TYPE: new

DOCUMENT-IDENTIFIER: US 20050252526 A1

TITLE: Single wafer cleaning apparatus and cleaning method thereof

PUBLICATION-DATE: November 17, 2005

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY
Ogawa, Naoki	Kanagawa		JP
Iwamoto, Hayato	Kanagawa		JP
Asada, Kazumi	Kanagawa		JP
Yokota, Mari	Nagasaki		JP
Hiei, Yasuhiro	Kumamoto		JP
Nishimatsu, Tsuyoshi	Kumamoto		JP

US-CL-CURRENT: [134/2](#); [134/148](#), [134/149](#), [134/151](#), [134/157](#), [134/26](#), [134/94.1](#)

ABSTRACT:

A single wafer cleaning method and a cleaning apparatus thereof are provided in which the transition to rinse treatment is swiftly performed without being influenced by a chemical liquid component, and a polymer and a residue of chemical liquid are suppressed to reduce defects on a substrate.

The single wafer cleaning method according to an embodiment of the present invention is a single wafer cleaning method of performing cleaning by a chemical liquid 8 and a rinse liquid 14 while rotating a substrate-to-be-cleaned 30, in which after chemical liquid treatment is performed by moving a chemical liquid nozzle 10 over the substrate-to-be-cleaned 30, rinse treatment is performed on the substrate-to-be-cleaned 30 by discharging the rinse liquid 14 from a rinse nozzle 16 disposed fixedly at a position not interfering with the movement of the chemical liquid nozzle 10.

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	HTML	Drawings
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☐ 2. Document ID: US 20050183754 A1

L13: Entry 2 of 34

File: PGPB

Aug 25, 2005

PGPUB-DOCUMENT-NUMBER: 20050183754
PGPUB-FILING-TYPE: new
DOCUMENT-IDENTIFIER: US 20050183754 A1

TITLE: Apparatus for and method of cleaning substrate

PUBLICATION-DATE: August 25, 2005

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY
Kago, Yoshikazu	Kyoto		JP
Iwami, Masaki	Kyoto		JP
Nonomura, Masahiro	Kyoto		JP

US-CL-CURRENT: 134/56R; 134/137, 134/149, 134/157

ABSTRACT:

A substrate cleaning apparatus includes two cleaning brushes driven independently of each other. A first cleaning brush makes a cycling movement including an outward movement progressing in a horizontal direction from a position in contact with the center of the rotation of a substrate to the outside of an edge of the substrate, an upward movement progressing in a vertically upward direction from an end position of the outward movement, an inward movement progressing in a horizontal direction from an end position of the upward movement to a position immediately over the center of the rotation of the substrate, and a downward movement progressing in a vertically downward direction from an end position of the inward movement to a start position of the outward movement. A second cleaning brush makes a similar cycling movement. The first and second cleaning brushes are adapted so that the speed of the inward movement thereof is higher than that of the outward movement thereof and so that the speed of the upward movement is higher than that of the downward movement thereof.

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	FIGS	Drawings
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3. Document ID: US 20050133066 A1

L13: Entry 3 of 34

File: PGPB

Jun 23, 2005

PGPUB-DOCUMENT-NUMBER: 20050133066
PGPUB-FILING-TYPE: new
DOCUMENT-IDENTIFIER: US 20050133066 A1

TITLE: Substrate treating method and apparatus

PUBLICATION-DATE: June 23, 2005

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY
Takahashi, Hiroaki	Kyoto		JP

US-CL-CURRENT: [134/25.4](#); [134/111](#), [134/186](#), [134/34](#), [134/36](#)

ABSTRACT:

In a substrate treating apparatus for performing cleaning treatment by what is called QDR method for substrates immersed in a treating tank, CO.sub.2-dissolved water having carbon dioxide dissolved in deionized water by a gas-liquid mixer is sprayed from nozzles to the substrates. CO.sub.2-dissolved water has low specific resistance, and is effective to prevent electrification of surfaces of the substrates when colliding with and contacting the surfaces of the substrates. Thus, the cleaning treatment is performed without leaving the substrates electrically charged.

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	FIGS	Drawings
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4. Document ID: US 20050115596 A1

L13: Entry 4 of 34

File: PGPB

Jun 2, 2005

PGPUB-DOCUMENT-NUMBER: 20050115596

PGPUB-FILING-TYPE: new

DOCUMENT-IDENTIFIER: US 20050115596 A1

TITLE: Substrate cleaning apparatus and substrate cleaning method

PUBLICATION-DATE: June 2, 2005

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY
Nakajima, Kazuo	Kyoto		JP
Sato, Masanobu	Kyoto		JP
Sugimoto, Hiroaki	Kyoto		JP
Hashizume, Akio	Kyoto		JP
Tsujikawa, Hiroki	Kyoto		JP

US-CL-CURRENT: [134/94.1](#); [134/100.1](#), [134/102.1](#), [134/148](#), [134/153](#), [134/902](#)

ABSTRACT:

A soft spray nozzle discharging a cleaning mist is vertically directed and fixed to an arm. A rinse nozzle discharging rinsing deionized water for suppressing obstruction is vertically fixed to the arm at a prescribed distance from the soft spray nozzle. During cleaning, it follows that both nozzles discharge detergents while keeping relative layout relation. Therefore, the discharged cleaning mist and rinsing deionized water do not interfere with each other before reaching the substrate but the used detergents are entirely horizontally splashed and recovered in a cup. Thus, the cleaning mist is prevented from scattering and adhering to the periphery.

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	FIGS	Drawings
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5. Document ID: US 20050056307 A1

L13: Entry 5 of 34

File: PGPB

Mar 17, 2005

PGPUB-DOCUMENT-NUMBER: 20050056307

PGPUB-FILING-TYPE: new

DOCUMENT-IDENTIFIER: US 20050056307 A1

TITLE: Substrate cleaning and drying apparatus

PUBLICATION-DATE: March 17, 2005

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY
Nagami, Shuzo	Kyoto		JP

US-CL-CURRENT: 134/95.2; 134/103.2, 134/137, 134/155, 134/172, 134/198, 134/200

ABSTRACT:

A substrate cleaning and drying apparatus for performing drying treatment after cleaning treatment of substrates. The apparatus includes a treating tank for storing a treating liquid, and performing the cleaning treatment of the substrates immersed in the treating liquid, a treating chamber housing the treating tank, and having an opening formed in an upper position of the treating chamber for allowing passage of the substrates into and out of the treating chamber, a lid member movable to open and close the opening of the treating chamber, and a holding mechanism for holding the substrates within the treating tank, the holding mechanism having suction bores. After the cleaning treatment of the substrates with the treating liquid in the treating tank, a gas is supplied toward the substrates, with the lid member closed, while suction is effected through the suction bores of the holding mechanism.

Full	Title	Citation	Front	Relevant	Classification	Date	Reference	Sequences	Attachments	Claims	FIGURE	Draw De
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6. Document ID: US 20040221876 A1

L13: Entry 6 of 34

File: PGPB

Nov 11, 2004

PGPUB-DOCUMENT-NUMBER: 20040221876

PGPUB-FILING-TYPE: new

DOCUMENT-IDENTIFIER: US 20040221876 A1

TITLE: Method of removing organic materials from substrates

PUBLICATION-DATE: November 11, 2004

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY
Waleh, Ahmad	Palo Alto	CA	US
Levenson, Eric O.	Los Altos	CA	US

US-CL-CURRENT: [134/30](#); [134/1](#), [134/19](#), [134/2](#), [134/26](#), [134/37](#), [134/38](#), [257/E21.229](#)

ABSTRACT:

Water-free, gaseous sulfur trioxide is used as an agent to remove various organic coatings, films, layers and residues from the surface of a substrate when used in conjunction with certain other physical and chemical treatments applied at the appropriate time during the process.

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	FIGS	Drawings
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7. Document ID: US 20040112410 A1

L13: Entry 7 of 34

File: PGPB

Jun 17, 2004

PGPUB-DOCUMENT-NUMBER: 20040112410

PGPUB-FILING-TYPE: new

DOCUMENT-IDENTIFIER: US 20040112410 A1

TITLE: Substrate treating apparatus and substrate treating method

PUBLICATION-DATE: June 17, 2004

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY
Araki, Hiroyuki	Kyoto		JP
Ogushi, Ryotaro	Kyoto		JP
Nagami, Shuzo	Kyoto		JP

US-CL-CURRENT: [134/26](#); [134/186](#), [134/36](#), [134/56D](#), [134/902](#), [134/95.1](#)

ABSTRACT:

A substrate treating apparatus and substrate treating method for performing at least cleaning treatment of substrates. The substrate are cleaned in a treating tank while a cleaning liquid (deionized water) is introduced into the treating tank through a bottom thereof and an excess amount of the cleaning liquid is allowed to overflow the tank. During the treatment, a feeding flow rate of the cleaning liquid is varied with time, to prevent a stagnation of flows in the tank and promote the effect of removing particles. The cleaning liquid in the tank is not drawn off quickly, to avoid unnecessary vibration being applied to the substrates.

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	FIGS	Drawings
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8. Document ID: US 20040016442 A1

L13: Entry 8 of 34

File: PGPB

Jan 29, 2004

PGPUB-DOCUMENT-NUMBER: 20040016442

PGPUB-FILING-TYPE: new

DOCUMENT-IDENTIFIER: US 20040016442 A1

TITLE: Megasonically energized liquid interface apparatus and method

PUBLICATION-DATE: January 29, 2004

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY
Cawlfeld, B. Gene	Dallas	TX	US

US-CL-CURRENT: [134/1.3](#); [134/102.1](#), [134/186](#), [134/30](#), [134/902](#)

ABSTRACT:

Apparatus and method for removing material adhering to a workpiece are disclosed. A process liquid and a discontinuous phase are placed in a process tank adapted to receive a workpiece. The interface between the process liquid and the discontinuous phase is energized with megasonic energy, and the interface is contacted with and moved relative to the workpiece in a linear direction at a controlled rate, preferably across all of the workpiece. Liquid in the interface is optionally removed from the process tank at predetermined times to remove entrained particles. Numerous drying schemes can be used to reduce or eliminate formation of droplets and to speed drying time.

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	FIGs	Drawings
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9. Document ID: US 20040003829 A1

L13: Entry 9 of 34

File: PGPB

Jan 8, 2004

PGPUB-DOCUMENT-NUMBER: 20040003829

PGPUB-FILING-TYPE: new

DOCUMENT-IDENTIFIER: US 20040003829 A1

TITLE: Substrate cleaning apparatus and substrate cleaning method

PUBLICATION-DATE: January 8, 2004

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY
Hirae, Sadao	Kyoto		JP

US-CL-CURRENT: [134/1.3](#); [134/153](#), [134/157](#), [134/184](#), [134/33](#), [134/6](#)

ABSTRACT:

A plurality of substrate holding pins 13 extend upright from a holding stage 12, and a substrate W is mechanically held in a circumferential direction with a back surface Sb of the substrate W faced up. Between the substrate W and the holding stage 12, a drip-proof plate 14 whose shape is approximately the same as that of the substrate W is disposed with a distance from the substrate W in such a manner that the drip-proof plate 14 covers a front surface (pattern-bearing surface) Sf of

the substrate W from below. The drip-proof plate 14 disposed so as to cover the front surface Sf of the substrate W blocks the mist from splashing upon the front surface Sf of the substrate.

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	FIGS	Drawings
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10. Document ID: US 20030164181 A1

L13: Entry 10 of 34

File: PGPB

Sep 4, 2003

PGPUB-DOCUMENT-NUMBER: 20030164181

PGPUB-FILING-TYPE: new

DOCUMENT-IDENTIFIER: US 20030164181 A1

TITLE: Substrate processing apparatus

PUBLICATION-DATE: September 4, 2003

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY
Ohtani, Masami	Kyoto		JP

US-CL-CURRENT: 134/62

ABSTRACT:

A cleaning processing part and an ashing processing part are oppositely arranged flush with each other through a transport path where a transport robot is arranged. The cleaning processing part comprises a surface scrubber and a rear scrubber. The ashing processing part performs ashing with plasma. The transport robot transports a substrate to be processed from an indexer successively through the ashing processing part, a reversal part and the cleaning processing part and returns the same to the indexer again. The transport robot immediately transports the substrate completely subjected to ashing toward the cleaning processing part, whereby the time required from ashing to cleaning processing is so reduced that a dead time can be eliminated while cleaning performance can be improved by performing cleaning processing immediately after ashing. Thus, a substrate processing apparatus improving cleaning performance by reducing a dead time up to cleaning processing is provided.

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	FIGS	Drawings
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Term	Documents
134/\$	0
134/1	1761
134/10	1199

"134/100.1"	281
"134/102.1"	562
"134/102.2"	252
"134/102.3"	143
"134/103.1"	263
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"134/104.1"	287
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1. Document ID: CN 1618527 A, JP 2005144376 A

L4: Entry 1 of 4

File: DWPI

May 25, 2005

DERWENT-ACC-NO: 2005-447483

DERWENT-WEEK: 200560

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TITLE: Resist liquid supply structure for substrate processing apparatus of e.g. liquid crystal display, has discharge port that ejects resist liquid with gas, and arranged at top edge of manifold higher than arrangement position of supply ports

INVENTOR: TAKAGI, Z; TAKAGI, Y

PRIORITY-DATA: 2003JP-0387641 (November 18, 2003)

PATENT-FAMILY:

PUB-NO	PUB-DATE	LANGUAGE	PAGES	MAIN-IPC
CN 1618527 A	May 25, 2005		000	B05C005/02
JP 2005144376 A	June 9, 2005		025	B05C005/02

INT-CL (IPC): B05 C 5/02; B05 C 11/00; B05 C 11/10; G03 F 7/16; H01 L 21/31

Full	Title	Citation	Front	Review	Classification	Date	Reference	Claims	Publ	Draw	Dis

2. Document ID: TW 200426933 A, WO 2004088735 A1, EP 1610366 A1

L4: Entry 2 of 4

File: DWPI

Dec 1, 2004

DERWENT-ACC-NO: 2004-737841

DERWENT-WEEK: 200612

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TITLE: Cleaning method of photomask and semiconductor wafer, involves contacting highly viscous liquid to surface of photomask to separate stain adhering to photomask

INVENTOR: TAKUSHIMA, K

PRIORITY-DATA: 2003JP-0097092 (March 31, 2003)

PATENT-FAMILY:

PUB-NO	PUB-DATE	LANGUAGE	PAGES	MAIN-IPC
TW 200426933 A	December 1, 2004		000	H01L021/304
WO 2004088735 A1	October 14, 2004	J	045	H01L021/304

EP 1610366 A1 December 28, 2005 E 000 H01L021/304

INT-CL (IPC): B08 B 3/04; B08 B 7/00; G03 F 1/08; H01 L 21/304

Full	Title	Citation	Front	Review	Classification	Date	Reference	Claims	FIG	Draw	Doc
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3. Document ID: TW 200405459 A, US 20040055621 A1, EP 1402963 A2, KR 2004026639 A, JP 2004268019 A, TW 221007 B1

L4: Entry 3 of 4

File: DWPI

Apr 1, 2004

DERWENT-ACC-NO: 2004-345680

DERWENT-WEEK: 200568

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TITLE: Processing article, i.e. semiconductor components, involves preparing dense fluid by introducing subcritical fluid into pressurization vessel, and introducing processing agent(s) and ultrasonic energy into processing chamber

INVENTOR: JONSON, A D; MCDERMOTT, W T ; SCHWARZ, A ; SUBAWALLA, H ; JOHNSON, A D

PRIORITY-DATA: 2002US-0253054 (September 24, 2002)

PATENT-FAMILY:

PUB-NO	PUB-DATE	LANGUAGE	PAGES	MAIN-IPC
TW 200405459 A	April 1, 2004		000	H01L021/306
US 20040055621 A1	March 25, 2004		020	C25F001/00
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TW 221007 B1	September 11, 2004		000	H01L021/306

INT-CL (IPC): B08 B 3/08; B08 B 3/12; B08 B 7/00; C11 D 11/00; C25 F 1/00; H01 L 21/00; H01 L 21/304; H01 L 21/306

Full	Title	Citation	Front	Review	Classification	Date	Reference	Claims	FIG	Draw	Doc
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4. Document ID: JP 02099175 A

L4: Entry 4 of 4

File: DWPI

Apr 11, 1990

DERWENT-ACC-NO: 1990-158946

DERWENT-WEEK: 199021

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TITLE: Waste liq. discharge device for photomask cleaning device, etc. - has liquid pool by which high viscosity treatment liq. is discharged and diluted by low viscosity treatment liquid NoAbstract Dwg 1/5

PRIORITY-DATA: 1988JP-0249113 (October 4, 1988)

PATENT-FAMILY:

PUB-NO	PUB-DATE	LANGUAGE	PAGES	MAIN-IPC
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JP 02099175 A

April 11, 1990

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INT-CL (IPC): B05 C 9/10; B08 B 3/02; G03 F 1/08; H01 L 21/30

Full	Title	Citation	Front	Review	Classification	Date	Reference			Claims	FIGS	Drawings
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Term	Documents
PHOTOMASK	16802
PHOTOMASKS	2080
CLEANING	374952
CLEANINGS	291
VISCOS\$	0
VISCOS	66
VISCOSA	223
VISCOSAGYAR	23
VISCOSAL	1
VISCOSALACTONE	1
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L3: Entry 6 of 10

File: USPT

Nov 21, 2000

DOCUMENT-IDENTIFIER: US 6149727 A

TITLE: Substrate processing apparatus

Brief Summary Text (5):

Substrate processing apparatuses are used to apply various processings, such as processing for applying processing liquid like photoresist liquid, developing processing, cleaning processing, etc., to substrates such as semiconductor wafers, glass substrates for use in liquid-crystal display devices, glass substrates for photomasks, glass substrates for optical disks, etc.

Brief Summary Text (16):

Recently, with spin coaters, there is a tendency to increase the rotating speed of the substrate W when spreading resist liquid for the purpose of saving the resist. Also, when using special resist liquid having high viscosity with a spin coater, the substrate W is rotated at increased speed to spread the resist liquid so that the thickness of the resist film can be controlled thin.

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L13: Entry 33 of 34

File: USPT

Dec 29, 1987

DOCUMENT-IDENTIFIER: US 4715392 A

TITLE: Automatic photomask or reticle washing and cleaning system

Abstract Text (1):

Automatic photomask or reticle washing and cleaning system comprises a foreign particle inspecting unit for inspecting whether or not foreign particles are attached to the surfaces of substrates; a washing and cleaning unit for washing and cleaning the surfaces of substrates with a cleaning liquid, thereby removing foreign particles and transfer means for withdrawing a substrate from a case, transferring the withdrawn substrate to the washing and cleaning unit, thereafter transferring the washed and cleaned substrate to the foreign particle inspecting unit and finally inserting the inspected substrate into the case again. In the washing and cleaning system, the washing and cleaning unit has a wash tub, means disposed in the wash tub for spraying or jetting a cleaning liquid against the surface of a substrate, means for rubbing the surfaces of the substrate which are wetted by the cleaning liquid, thereby removing foreign particles and washing means for washing away the cleaning liquid still remaining over the surfaces of the substrate even after removal of foreign particles.

Current US Original Classification (1):134/62Current US Cross Reference Classification (1):134/113Current US Cross Reference Classification (2):134/66Current US Cross Reference Classification (3):134/902[Previous Doc](#)[Next Doc](#)[Go to Doc#](#)

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L3: Entry 5 of 10

File: USPT

Mar 25, 2003

DOCUMENT-IDENTIFIER: US 6536452 B1

TITLE: Processing apparatus and processing method

Detailed Description Text (32):

Further, the objects to be processed are not limited to the above wafers W and therefore, the present invention is also applicable for cleaning LCD substrates, glass substrates, CD substrates, photomasks, printed boards, ceramic substrates, etc. Additionally, the present invention can be applied to not only cleaning but an apparatus for applying a designated treatment liquid on the substrates and the method, an apparatus which supplies a process gas containing designated reactive components into a processing chamber thereby to process the substrates on physical, chemical reactions and the method, for example, plasma etching apparatus, plasma CVD apparatus, vacuum processing apparatus, etc.

Detailed Description Text (41):

As shown in FIG. 13, the rotor 211 is connected to a drive shaft 222a of the horizontally-arranged motor 222 in the manner of a cantilever. The rotor 211 carries the wafers W so that their surfaces to be processed stand perpendicularly and is adapted so as to be rotatable about the horizontal axis. The rotor 221 includes a first rotor disc 221a having a rotor shaft 221A connected to the drive shaft 222a of the motor 222 through a coupling 222b, a second rotor disc 221b opposing the first rotor disc 221a, several (e.g. four pieces) fixing rods 231 laying between the first rotor disc 221a and the second rotor disc 221b, and a pair of pusher rods 232 which are movable between their pushing position and their non-pushing position by not shown locking and lock-releasing units (both not shown), for holding the upper portions of the wafers W retained in retaining grooves 231a (see FIG. 20). A first fixing wall 234 through bearings 233 rotatably supports the rotor shaft 221A of the rotor 221. Further, owing to the provision of a labyrinth seal 235 succeeding to the bearing 333 on the side of the first fixing wall 234, the rotor 211 is constructed so as to prevent the invasion of particles etc. produced from the motor 222 into the processing chamber (see FIG. 13). Note, the motor 222 is accommodated in a cylinder 236 successively connected to the first fixing wall 234. The motor 222 is controlled so as to be repeatedly and selectively operable at predetermined high-speed rotation, for example, 100-3000 rpm and low-speed rotation, for example, 1-500 rpm in accordance with the program stored in the CPU 230 in advance. Note, although the above-exemplified ranges of high and low rotations overlap each other in part, either low-speed range or high-speed range is generally established with respect to the viscosity of chemical liquid and therefore, the ranges of high and low rotations do not overlap each other in case of the identical chemical liquid, which is similar in the descriptions hereinbelow. Here, the low-speed rotation means a low speed in comparison with the number of rotations which allows the chemical adhering to the wafers' surfaces to be removed by the rotor's centrifugal force, while the high-speed rotation means a high speed in comparison with the number of rotations which allows the supplied chemical liquid to contact with the wafers W thereby effecting the sufficient reaction.

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